

Joel Hasbrouck: Empirical Market Microstructure Oxford University Press, 2007, approx. 41.85 USD, 198 pages

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Books in the area of market microstructure are scarce. Apart from a few collections that cover special issues, there are only two major references: O'Hara (1995) reviews with *Market Microstructure Theory* really the theoretical literature up to that point in time. This book is worth reading as a basis for a Ph.D. lecture in order to get knowledge of the models and their interrelations. It goes very much into detail but, unfortunately, there is no update to it. Harris (2003) offers with *Trading and Exchanges*, a book on "Market Microstructure for Practitioners" explaining how state of the art securities markets work and how supply and demand come together. Essentially, that book also covers all the theoretical models but without a single formula.

Empirical Market Microstructure by Joel Hasbrouck, who has done research in the subject for decades, now fills the gap. The book covers the empirical specifications used in a wide variety of articles dealing with costs, liquidity, trading strategies, market design, the connection of different markets, and so on. Theory is only presented and explained where necessary, which yields a clear and short overview.

The book starts out with a brief list of issues and questions in the field of market microstructure. Chapter 2 gives the necessary overview of trading systems with examples of different exchanges around the world. It should be read in connection with the Appendix on US equity markets that yields a brief history. It helps to understand the main trading structures used throughout the book and in literature. Of course, such a chapter will never cover all securities in all market places. The development of electronic trading systems, consolidation, and internationalization currently change the world of securities markets at an enormous pace. But markets may be categorized according to the main trading mechanisms in order to facilitate the analysis. Chapter 3 covers the Roll model for order handling costs. Chapter 5 deals with sequential

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trade models, whereas the following chapters look into asymmetric information and strategic behaviour of market participants. In Chaps. 4, 8 and 9, the author departs a little from the analysis of market microstructure models to univariate and multivariate time-series analysis as well as to a general Roll model with two sources of randomness. These statistical models could also be found in an econometrics book but the short review of properties in this part facilitates the understanding and makes immediate implementation possible. Based on the statistical background, multiple securities models are analyzed in Chap. 10 where interdependencies are usually modelled with VMA, VAR, and VECM specifications. The dealer markets in Chap. 11 with the inventory holding costs, could well be covered earlier in the book since they belong to the eldest models in market microstructure. Their importance clearly decreases. On the other hand, for the limit order markets in the following chapter, still no widely accepted models exist. One chapter covers all issues around depth within different market structures. Two chapters on trading costs—ex post and ex ante—which lead, of course, to trading strategies conclude.

A book of this size can never be exhaustive. One can think of many extensions, as for example, toward liquidity issues aside from depth or liquidity and its impact on asset prices.

The present book is clearly designed to accompany an academic lecture. A small selection of exercises deepens some aspects. Also available is a website of the author that helps the reader understand several derivations and to implement a number of concepts. Additionally, the solutions to a part of the problems are given. The author proposes *Empirical Market Microstructure* for graduate and advanced undergraduate students. I consider the book too advanced for the latter. As of next year, I will use *Empirical Market Microstructure* as compulsory literature for my lecture in Market Microstructure on the Master's level at the University of St. Gallen.